

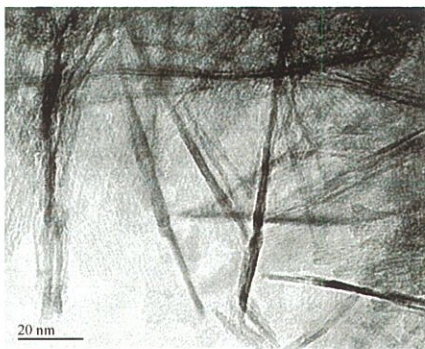
# ナノセラム<sup>®</sup> フィルター

—高流量を維持しつつウイルスやバクテリアを除去—

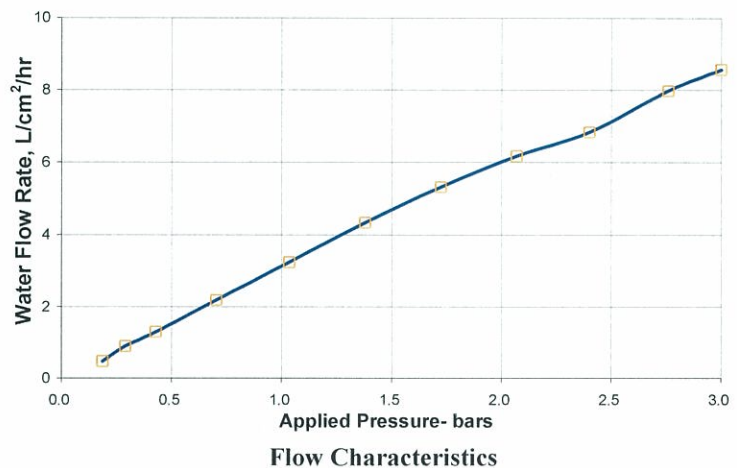
米国の **Argonide 社** は世界に先駆けてナノセラム<sup>®</sup> フィルターの開発に成功、バイオテクノロジーや超微細粒子の分離研究の飛躍的進歩に貢献。従来のウルトラポラスフィルターに比べ流量は 200 倍、且つウイルスやバクテリアを 99.9999%以上除去可能です。

ナノセラムフィルターを構成する主要材料は直径 2 ナノメートルのアルミナのファイバー (NanoCeram<sup>®</sup> Fiber) で、電氣的にプラスを帯びている為、ウイルスやバクテリアを効率良く吸着除去し、内毒素, DNA, RNA, 電氣的にマイナスを帯びたたんぱく質やナノレベルの無機及び有機超微細粒子を濾過可能です。超微細粒子はフィルター表面ではなく、フィルターの内部に蓄積される **Depth Filter** です。従って、最小限の圧力でも詰まりにくく、高濾過量が維持可能で、塩溶下でも長寿命です。

NanoCeram Fiber



AlOOH, 2~4 nm dia., アスペクト比 > 100  
BET: 300~500 m<sup>2</sup>/g



## 用途

- 混合水溶液の選択的濾過
- 雑菌の除去 (飲料水、その他飲料、血清、生物製剤、等)
- DNA、RNA、内毒素、等の濾過
- 核酸やたんぱく質の分離抽出 (電荷の差による)
- バイオ分析における細胞や酵素の固定
- 生物兵器の検出用採集器、濃縮器

## ナノセラム<sup>®</sup> パッケージ

13 mm Disc Filter (200 filters/pack), 25 mm Disc Filter (100 filters/pack), 37 mm Disc Filter (60 filters/pack)  
47 mm Disc Filter (40 filters/pack), 90mm Disc Filters (20 filters/pack), 142 mm Disc Filter (10 filters/pack)  
25mm dia. **Syringe** Filter (Luer-Loc connection 付き, 50 units/pack)

その他、カートリッジフィルター、特注フィルター(カスタマイズ可能)、等  
尚、NanoCeram ファイバー素材そのものの供給も致します。

お問い合わせは下記まで：

(株) ニューメタルス エンド ケミカルス コーポレーション

〒104 - 0031 東京都中央区京橋 1 - 2 - 5 京橋 TD ビル

電話： (03) 5202 - 5624 Fax： (03) 3271 - 5860

担当： 電子材料部・伊藤 Email： [ito@newmetals.co.jp](mailto:ito@newmetals.co.jp)



## NanoCeram<sup>®</sup> Filter Cartridge

Argonide introduces a family of filters designed to satisfy the most difficult needs in water treatment. NanoCeram<sup>®</sup> is a highly electropositive filter that rapidly adsorbs particles, no matter how small. The media has a high capacity for particles as large as tens of microns or as small as a few nanometers. Such is the nature of electropositive attraction that even with an average pore size of 2 - 3 microns the NanoCeram<sup>®</sup> Filter Cartridge exhibits an Absolute Rating of 0.2 microns. The 0.2 micron rating is typically associated with ultraporous membranes. Yet NanoCeram<sup>®</sup> flow rates are hundreds of times greater than such membranes. The NanoCeram<sup>®</sup> filter is effective over pH 5-10, in water temperatures of 39 - 122°F (4 - 50°C) and in the presence of dissolved salts.

NanoCeram<sup>®</sup> P Series Cartridges are capable of:

- Cyst Retention: > 5 LRV
- Bacteria (*Klebsiella terrigena*): > 5 LRV
- Temperature Range: 39 - 122° F (4 - 50°C)
- Maximum Pressure: 70 psi (4.83 bar)
- Effective pH Range: 5 - 10



Part No.	P2.5-5	P2.5-10	P2.5-20	P4.5-10	P4.5-20
Effective surface area (in <sup>2</sup> )	200	450	960	1500	3000
(cm <sup>2</sup> )	(1,290)	(2,903)	(6,194)	(9,677)	(19,354)
Diameter × Length (in)	2.625 × 4.875	2.625 × 9.875	2.625 × 19.875	4.50 × 9.875	4.50 × 19.875
(cm)	(6.67 × 12.38)	(6.67 × 25.08)	(6.67 × 50.48)	(11.43 × 25.08)	(11.43 × 50.48)
Maximum Flow Rate * (GPM)	5	10	20	25	35
(LPM)	(19)	(38)	(76)	(95)	(133)

\* Maximum Flow Rate based on initial flow using new filter cartridge and clean water during laboratory testing.



## NanoCeram® Multi-Round Cartridge Housing

In applications which benefit from NanoCeram® Electropositive Filter technology, but at very high flowrates, a user typically installs multiple filter housings in parallel with each housing holding a single cartridge. Although this does provide the flowrates and ultra-high efficiencies to be expected from NanoCeram® Filters, there are some challenges involved. A larger footprint to incorporate multiple housings, installation complexity and the increased maintenance time and costs to service multiple housings are at the top of the list.

Argonide's custom-built stainless steel housings answer the challenge and are available in three sizes. All hold multiple Big Blue cartridge filters and can attain flowrates of up to 420gpm (264gpm using suggested flow rates) per housing. Manufactured from high quality 304 Stainless Steel, each housing is 150 psi-rated and utilizes clamp closures. The HBB-60 and HBB-120 models incorporate a 3" flange and the HBB-240 model uses a 4" flange. We can also supply different sizes for the inlet and/or outlet.

NanoCeram® Multi-Round Cartridge Housing (Part #)		HBB-60 (3 x 20" Big Blue)	HBB-120 (6 x 20" Big Blue)	HBB-240 (12 x 20" Big Blue)
<b>Peak Flow Rate *</b>	GPM (LPM)	105 (400)	210 (800)	420 (1,600)
<b>Suggested Flow Rate</b>	GPM (LPM)	66 (250)	132 (500)	264 (1,000)
<b>Dimensions</b> (Circumference x Height)	IN (CM)	16.7 x 39.5 (42.4 x 100.3)	16.7 x 59.5 (42.4 x 151)	21 x 60.2 (53.3 x 153)

\* Peak Flow Rate based on initial flow using new filter cartridges and clean water during laboratory testing.

SPECIFICATIONS

The advantages of a NanoCeram® Multi-Round Big Blue Housing include:

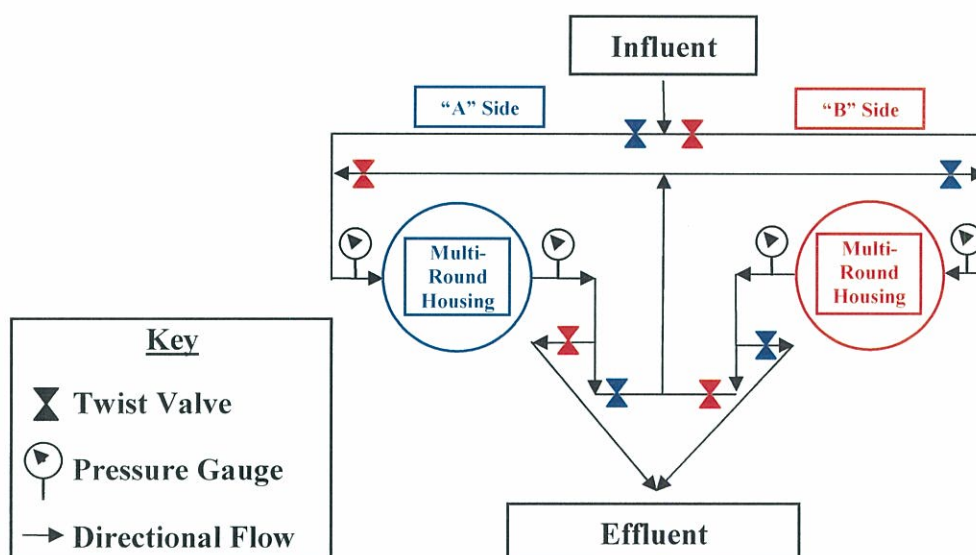
1. In high flowrate applications, a single housing to open for servicing versus multiple standard housings minimizes labor costs;
2. Plumbing is simpler when installing a single Multi-Round Housing versus multiple standard housings;
3. A stainless steel housing typically lasts longer than plastic housing;
4. Greater pressure rating versus plastic housings;
5. Space savings with a minimized footprint;
6. Most cost efficient use of NanoCeram® Filter Cartridges.

ADVANTAGES

## NanoCeram® Multi-Round Cartridge “Plug & Play” System

To attain increased efficiency, an option is to utilize two identical NanoCeram® Stainless Steel Multi-Round Cartridge Filter housings plumbed in series. The goal in the configuration below is to use Housing “A” as the primary filtration mechanism, while Housing “B” polishes. When configured correctly, the user reverses the order of flow from housing to housing using well-marked twist valves, replaces the filters in the primary housing, and continues the same process indefinitely. Now Housing “B” is the primary and Housing “A” polishes. Argonide will design, engineer and build a custom configuration; or supply the user with components of a system.

- Valves are marked to enable the user to switch the correct set of valves during maintenance cycles:
  - When the flow is in the **A→B** direction, all **BLUE** valves are open, while all **RED** valves remain closed;
  - Fluid flows first through the “A” side and is then directed through the “B” side for further polishing;
  - When  $\Delta P$  through the “A” side reaches 20psi, service is suggested;
- The operator shuts down the flow in order to open the “A” side housing to replace all the NanoCeram® filter cartridges contained in that housing;
- After replacement, the operator manually switches the valves to reverse the order of flow to a **B→A** direction:
  - When the flow is set in the **B→A** direction, all **RED** valves are open, while all **BLUE** valves remain closed;
  - Fluid flows first through the “B” side and is then directed through the “A” side for further polishing;
  - When  $\Delta P$  through the “B” side reaches 20psi, service is suggested;
- The operator shuts down the flow in order to open the “B” side housing to replace all the NanoCeram® filter cartridges contained in that housing;
- Operator must make note of  $\Delta P$  for the “B” side at the beginning of this new cycle to ascertain the current dirt-loading level for the new front-line housing as the cartridges contained in this housing will already contain an unknown, but potentially significant quantity of contaminants;
- Repeat the above steps for an efficient rotational operation of this system.







Model # HBB-240

## NanoCeram<sup>®</sup> HyFlo<sup>™</sup>

### Multi-Round Big Blue Cartridge Housings

Many industrial and commercial settings have limited floorspace and it is often impractical to install and service multiple filter housings in order to gain higher flow capacity. The costs associated with the time and labor to service multiple housings creates an additional burden for many organizations. A HyFlo<sup>™</sup> housing provides the user with all the NanoCeram<sup>®</sup> technological advantages, but in a single stainless steel unit. Each HyFlo<sup>™</sup> provides the flowrates, ultra-high efficiencies and large capacity of NanoCeram<sup>®</sup> Filters without the disadvantages of multiple housings. The user also avoids the installation complexity and increased maintenance time and costs to service multiple housings.

Argonide's custom-built stainless steel housings are available in five sizes. All hold multiple 4.5" x 20" Big Blue cartridge filters and can attain peak flowrates up to 1,330 gpm (836 gpm using nominal flow rates) per housing. Manufactured from high quality 304 or 316 Stainless Steel, every HyFlo<sup>™</sup> housing is 150 psi-rated and utilizes either clamp or swing-bolt closures depending on the model. The HBB-60 and HBB-120 models incorporate a 3" flange and the HBB-240 model uses a 4" flange. The HBB-380 & HBB-760 models incorporate 6" flanges. Depending on the customer's needs, Argonide can supply other sizes for the inlet and/or outlet ports.

NanoCeram <sup>®</sup> HyFlo <sup>™</sup> (Model #)	HBB-60	HBB-120	HBB-240	HBB-380	HBB-760
<b>Peak Flow Rate</b> * gpm (lpm)	<b>105</b> (400)	<b>210</b> (800)	<b>420</b> (1,600)	<b>665</b> (2,520)	<b>1,330</b> (5,040)
<b>Nominal Flow Rate</b> gpm (lpm)	<b>66</b> (250)	<b>132</b> (500)	<b>264</b> (1,000)	<b>418</b> (1,580)	<b>836</b> (3,170)
<b>Dimensions</b> inches (Circumference x Height) (cm)	<b>16.7 x 39.5</b> (42.4 x 100.3)	<b>16.7 x 59.5</b> (42.4 x 151)	<b>21 x 60.2</b> (53.3 x 153)	<b>30 x 59</b> (76 x 150)	<b>30 x 69</b> (76 x 175)
<b>Cartridge Capacity</b> (4.5" x 20" or Part# P4.5-20)	<b>3</b>	<b>6</b>	<b>12</b>	<b>19</b>	<b>38</b>

SPECIFICATIONS

\* Peak Flow Rate based on initial flow using new filter cartridges and clean water during laboratory testing.

NanoCeram<sup>®</sup> HyFlo<sup>™</sup> advantages include:

- A single housing to service versus multiple standard housings minimizes labor costs
- Simpler installation
- A stainless steel housing is more durable than typical plastic housings
- Greater pressure rating versus plastic housings
- Minimized footprint saves floor space
- Most cost efficient use of NanoCeram<sup>®</sup> Filter Cartridges

SUMMARY